



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/640,850	08/13/2003	Yasunori Ito	MURTP083D1	9131

22434 7590 07/10/2006  
BEYER WEAVER & THOMAS, LLP  
P.O. BOX 70250  
OAKLAND, CA 94612-0250

EXAMINER

WILKINS III, HARRY D

ART UNIT PAPER NUMBER

1742

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/640,850	<b>Applicant(s)</b> ITO ET AL.	
	<b>Examiner</b> Harry D. Wilkins, III	<b>Art Unit</b> 1742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2006 and 24 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/392,466.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowman (US 5,115,221) in view of Matsuoka et al (US 3,872,582) and Mahoney (US 5,257,003).

Cowman teaches the invention substantially as claimed. Cowman teaches (see abstract, figures and col. 6, line 4 to col. 15, line 15) a method of making a varistor (variable resistor, which genus includes a thermistor) including stacking a specified number of ceramic green sheets, cutting the stacked ceramic green sheets to obtain an element, applying a ceramic material having a higher specified resistance than the ceramic green sheets entirely over the outer surface except the end parts, baking the element, and depositing conductive terminal layers on the opposing end parts.

Thus, Cowman fails to teach that the conductive terminal layers are deposited by an electrolytic plating process. In fact, Cowman is completely silent as to how the coating is formed (see col. 9, lines 39-47). Cowman assumes that one of ordinary skill in the art was well aware of how to apply the terminals.

Matsuoka et al teach (see abstract, figure and col. 5, lines 4-11) conventional methods for applying a conductive terminal on a sintered ceramic resistor element,

Art Unit: 1742

similar to the one disclosed by Cowman. Matsuoka et al teach that the known methods included electrolytic plating.

Therefore, it would have been within the knowledge and skill of one of ordinary skill in the art to have used the conventional electrolytic plating method as disclosed by Matsuoka et al for applying the conductive terminal of Cowman because the electrolytic plating was known to be capable of forming the conductive terminals.

Further, Cowman teach (see col. 7, lines 15-64) that the ceramic layer (21) had a specific higher resistance than the ceramic green sheets in order for the varistor to function and states that the ceramic layer can either be of the same composition as the ceramic green sheets albeit with higher specific resistance or a differing composition with higher specific resistance, and does not expressly disclose a mixed oxide material as claimed.

Mahoney teaches (see abstract and col. 3, lines 12-29) that thermistors could be made from various compositions, including mixtures of Mn, Ni, Co, Fe, Cu and Al oxides.

Therefore, it would have been obvious to one of ordinary skill in the art to have made the ceramic layer (21) of Cowman from other ceramic compositions known to be suitable for use in varistors/thermistors that have higher specific resistances, such as those disclosed by Mahoney, in order to have selected an appropriate ceramic layer (21) having a higher specific resistance than the ceramic green sheets of Cowman to produce an operable varistor/thermistor.

Regarding claim 14, Cowman teaches (see col. 7, lines 31-64) that the ceramic layer and the thermistor element can be made of the same principal component, of which

Regarding claim 15, it would have been obvious to have made the variable resistor element to have any desired specific resistance, such as lower than 200  $\Omega$ -cm, in order to make the resistor suitable for a desired end use.

### ***Response to Arguments***

3. Applicant's arguments filed 27 April 2006 have been fully considered but they are not persuasive. Mahoney does not teach or suggest making the ceramic layer from a mixed metal oxide of higher specific resistance.

In response, as noted in the rejection grounds above, Cowman teaches using a ceramic coating layer (21) of higher specific resistance than the ceramic green sheets. Cowman teaches that the layer (21) was either of the same composition with different crystal structure to provide the higher specific resistance or of a different composition to provide the higher specific resistance. In view of the teachings of suitable mixed metal oxides for use in varistors/thermistors in Mahoney, the Examiner finds that it would have been considered routine optimization for one of ordinary skill in the art to have selected a different ceramic composition, such as those disclosed by Mahoney as being suitable for use in thermistors, to have provided the higher specific resistance ceramic coating layer (21). Applicant has not provided any comparison results showing that the selection of the specifically claimed mixed metal oxide ceramic coating layer provided unexpected results over the varistor/thermistor of Cowman.

It is noted that previously, claim 16 recited a "ceramic layer", whereas it was unclear which ceramic material this was in claim 13, since claim 13 recited "ceramic green sheets" and "ceramic material". The Examiner interpreted the claims in the prior rejections based on the "ceramic layer" being the "ceramic green sheets" since sheets can be considered to be layers. Applicant has clarified the record to show that the "ceramic layer" of claim 16, now incorporated into claim 13, was referring to the "ceramic material" of original claim 13 by amending "ceramic material" to be "ceramic layer". This caused the reworking of the rejection of the claims as noted in the differences between the above rejection grounds and the prior rejection grounds of claim 16.

#### ***Drawings***

4. The drawings were received on 27 April 2006. These drawings are accepted.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

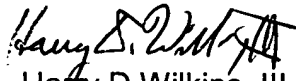
Art Unit: 1742

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Harry D Wilkins, III  
Primary Examiner  
Art Unit 1742

hdw